

Amendment To The Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended) Apparatus for detecting particles on a surface of a semiconductor wafer, said surface having repetitive patterns, the apparatus comprising:

(a) a laser for illuminating an area on said surface with a beam of polarized light,

(b) a first camera,

(c) a first imaging lens for collecting light scattered from said area, said first imaging lens forming a Fourier diffraction pattern of light scattered from said area illuminated,

(d) a Fourier mask for blocking light in said Fourier diffraction pattern where the intensity is above a predetermined level indicative of background information and leaving in areas where the intensity is below said predetermined level indicative of particle information, the Fourier mask including a spatial light modulator (SLM) which is optically addressable and a polarization discriminator in the form of a polarizing beamsplitter, the polarizing beamsplitter being disposed optically between the first imaging lens and the SLM,

(e) a second camera,

(f) a second imaging lens for imaging the Fourier diffraction pattern formed by the first imaging lens into the second camera, said second camera

converting the image of the Fourier diffraction patterns into a stream of digital electrical signals,

(g) a processor for processing the stream of digital electrical signals formed by the second camera,

(h) a liquid crystal display (LCD) for converting the output of the processor into a video image, and

(i) a third imaging lens for imaging the video image of the LCD onto the SLM,

(j) said first camera recording the image of the area imaged by said first imaging lens using scattered light not blocked by said Fourier mask.

Claims 2-18 (canceled).

Claim 19 (currently amended) Apparatus for detecting particles on a surface of a semiconductor, said surface having repetitive patterns, the apparatus comprising:

(a) a laser for illuminating an area on said surface with a beam of polarized light,

(b) a first imaging lens for collecting light scattered from said area, said first imaging lens forming a Fourier diffraction pattern of light scattered from the area at the back focal plane of the first imaging lens,

(c) a beamsplitter for splitting the light collected by the first imaging lens into a transmitted beam and a reflected beam,

(d) a first camera disposed along the path of the transmitted beam at the image plane of the first imaging lens,

(e) a Fourier mask disposed between the beamsplitter and the first camera, the Fourier mask including ~~a~~ an electrically addressable spatial light modulator (SLM) operating in a transmission mode and a ~~polarization discriminator~~ crossed polarizer, said SLM being disposed in the Fourier transform plane of the first imaging lens, said Fourier mask blocking off light in said diffraction pattern where the intensity is above a predetermined level indicative of background information and leaving in areas where the intensity is below said predetermined level indicative of particle information,

~~(f) a second camera disposed along the path of reflected beam at the back focal plane of the first imaging lens for converting an image of the diffraction pattern formed by the first imaging lens using light from the reflected beam into a stream of digital electrical signals,~~

(g) a second imaging lens for imaging the Fourier transformation of light collected by the first imaging lens using light from the reflected beam into the second camera where it is converted into a stream of digital electrical signals,

~~(h) (g)~~ a processor for processing the stream of digital electrical signals formed by the second camera, and

(i) (h) an SLM controller for applying the output of the processor into the SLM,

(j) (i) said first camera recording an image of the area illuminated by said first imaging lens and not blocked by said Fourier mask.

Claim 20 (currently amended) Apparatus for detecting particles on a surface of a semiconductor, said surface having repetitive patterns, the apparatus comprising:

(a) a laser for illuminating an area on said surface with a beam of polarized light,

(b) a first imaging lens for collecting light scattered from said area, said first imaging lens forming a Fourier diffraction pattern of light scattered from the area at the back focal plane of the first imaging lens,

(c) a beamsplitter for splitting the light collected by the first imaging lens into a transmitted beam and a reflected beam,

(d) a first camera disposed along the path of the transmitted beam at the image plane of the first imaging lens,

(e) a Fourier mask disposed between the beamsplitter and the first camera, the Fourier mask including a an electrically addressable spatial light modulator (SLM) operating in a reflective mode and a ~~polarization discriminator~~ crossed polarizer, said SLM being disposed in the Fourier transform plane of the first imaging lens, said Fourier mask blocking off light in said diffraction pattern where the intensity is above a predetermined level indicative of background information and leaving reflecting light in areas back to said beamsplitter where the intensity is below said predetermined level indicative of particle information,

(f) a second camera disposed along the back focal plane of the first imaging lens for converting an image of the diffraction pattern formed by the first imaging lens using light reflected beam into a stream of digital electrical signals,

(g) a processor for processing the stream of digital electrical signals formed by the second camera, and

(h) an SLM controller for applying the output of the processor into the SLM,

(i) said first camera recording an image of the area illuminated by said first imaging lens and not blocked by said Fourier mask.

Claims 21 and 22 (canceled)